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PLANT INDUSTRY

PLANT IMMIGRANTS.

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GENERA REPRESENTED IN THIS NUMBER.

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Foreign Seed and Plant Introduction.

EXPLANATORY NOTE.

This multigraphed circular is made up of descriptive notes furnished mainly by Agricultural Explorers and Foreign Correspondents relative to the more important introduced plants which have recently arrived at the Office of Foreign Seed and Plant Introduction of the Bureau of Plant Industry of the Department of Agriculture, together with accounts of the behavior in America of previous introductions. Descriptions appearing here are revised and published later in the INVENTORY OF PLANTS IMPORTED.

Applications for material listed in these pages may be made at any time to this Office. As they are received they are placed on file, and when the material is ready for the use of experimenters it is sent to those on the list of applicants who can show that they are prepared to care for it as well as to others selected because of their special fitness to experiment with the particular plants imported. Do not wait for the annual catalogue entitled NEW PLANT INTRODUCTIONS which will be sent you in the autumn and in which will be listed all plants available at that time. Regular requests checked off on the check list sent out with the catalogue are not kept over from year to year. If you are especially interested in some particular plant in the catalogue write and explain in detail your fitness to handle it.

One of the main objects of the Office of Foreign Seed and Plant Introduction is to secure material for plant experimenters, and it will undertake as far as possible to fill any specific requests for foreign seeds or plants from plant breeders and others interested.

David Fairchild,

Agricultural Explorer in Charge.

April 12, 1919.

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Annona senegalensis (Annonaceae), 46630. From Ibadan, Southern Provinces, Nigeria. Presented by the Director of Agriculture. **Abo** (wild sop) varies greatly in size sometimes being a low shrub up to 2 or 3 feet in height, and again a tree 20 feet in height. The young branches are rusty or tawny tomentose. The coriaceous leaves have a rounded apex and broadly rounded base; the upper surface is glabrescent and the lower is usually pale and more or less pubescent. The solitary flowers are borne on spreading or decurved peduncles, one-third to one and one-half inches long. The edible fruit is erect or pendent, yellow or orange when ripe and one and one-half inches or more in diameter. This plant has been found in Upper and Lower Guinea, Bornu, Mozambique District, and the upper Nile valley. (Adapted from Oliver, Flora of Tropical Africa, vol. 1, p. 16.) Introduced for breeding experiments with the different species of this genus to which the sugar-apple, sour-sop and custard-apple belong.

Artocarpus odoratissima (Moraceae), 46635. **Marang.** From Philippine Islands. Presented by Mr. P. J. Wester, Agricultural Advisor, Zamboanga, P. I. "**Marang,** also known as **madang.** A medium-sized tree with large, dark green leaves, entire or more or less conspicuously trilobate, 45 to 60 cm. (18–24 in.) long and 25 to 30 cm. (10–12 in.) broad. The tree is similar in habit to the breadfruit, and is found in the Sulu Archipelago and on the south coast of Mindanao, and was first described from Mindoro. The fruit is large, 16 cm. (6+ in.) long and 13 cm. (5+ in.) in equatorial diameter, roundish oblong, regular, thickly studded with soft, greenish yellow spines about 7 mm. (1/4 in.) long; rind thick and fleshy; flesh white, sweet, rich, juicy, aromatic, and of good flavor, separates into segments (about the size of a grape) clinging to the core; each segment containing a seed; seeds many, whitish, 8 by 15 mm. (3/10 by 3/5 in.), smooth, separating readily from the flesh. When the fruit is ripe, by passing a knife around and through the rind with a little care, the two halves separate from the flesh leaving this like a bunch of white grapes. Ripe fruits were obtained in August. The **marang** is far superior to its relatives the jak and the ordinary breadfruits found in the Philippines, and even in its present form is a remarkably good and attractive fruit. The tree was noted by the writer in Zamboanga and Davao.

"The **marang** is one of the coming tropical fruits. It is very sweet and rich in flavor, and has the unique quality of having a flesh that separates easily from the seeds and the skin. As far as I have been able to ascertain, the **marang** occurs only on the south coast of Mindanao and in the Sulu Archipelago. On my return to Manila I met on the steamer a missionary who had lived in Borneo for three years, part of which time was spent in Sandakan; she had neither heard of nor seen the fruit before. The **marang** will probably not succeed except where the climate is warm and humid throughout the year and the atmosphere close and still. In my opinion it is the best fruit of the genus. Iced, it is very delicious indeed." (Wester, The Philippine Agricultural Review, November, 1912, and letter of August 15, 1918.)

Berberis pruinosa (Berberidaceae), 46711. **Barberry.** From San Rafael, California. Seeds presented by Mr. R. H. Menzies. "This barberry is one of the handsomest of the seventy-odd species I have under cultivation. It is the first to flower, the large, clear yellow flowers being very showy. The white, powdery berries are borne profusely and are carried through the winter, a few remaining on the plant along with the next season's flowers. While an evergreen in California, it will probably be deciduous in the east. The foliage becomes very handsomely colored in the fall. I know of no barberry that puts on a greater growth, almost from the start; my plant throws out new shoots each year, all the way from 5 to 6½ feet from the base." (Menzies.)

Carica candamarcensis (Papayaceae), 46623. From Ecuador. Collected by Dr. J. N. Rose, Associate Curator, National Herbarium, Washington, D. C. "From Ambato. Called **Chamburo** in Ambato but a different species from No. 20 sent in from Huigra as **Chamburo**. Fruit small." (Rose.)

"It is very similar to the papaya. The plants grow to a height of about 10 feet, and resemble those of the papaya except in the distinctly darker color of the foliage and the less deeply lobed leaves. Staminate and pistillate flowers seem always to be produced on separate plants. The fruits are borne singly, not in clusters as is often the case in the wild papayas of Florida. They are obovoid-elliptic in shape, 2 to 4 inches in length, orange-yellow in color when ripe, with a more pronounced aroma than in the papaya. The flesh is about half an inch thick; each of the numerous seeds, which fill the large cavity, is enclosed in a

translucent, whitish aril which is the part eaten. The seeds do not adhere to the wall of the seed cavity as in the papaya, but, together with the arils surrounding them, entirely fill the cavity. The flavor of the arils is sweet and aromatic, very pleasant, and quite distinct from that of the flesh of the papaya." (Popenoe.)

Carissa carandas (Apocynaceae), 46636. From Philippine Islands. Presented by Mr. P. J. Wester, Agricultural Advisor, Zamboanga, P. I. "A thorny shrub from India, with black plumlike fruits having semitransparent, subacid flesh of very good flavor. A very good fruit eaten out of hand and would probably make a good preserve. One of the best small fruits introduced into the Philippines within recent years." (Wester.)

Chenopodium nuttalliae (Chenopodiaceae), 46632. From Mexico. Purchased through Mrs. Zelia Nuttall, Casa Alvarado, Coyoacan, Mexico. "Black-seeded form from Xochimilco, which the agriculturists there consider the best. It is of last year's crop which is particularly prized. Several Indians told me that **huauhtzontli** was considered 'more nourishing than meat.' My cook prepares it as follows: she makes bunches of the inflorescence, ties them and boils them in water and salt, then scrapes off the green seeds and shapes the mass like a small flat croquette, puts a small piece of cheese into it, dips the whole in batter made of egg and a little flour, and fries like croquettes. Sometimes she makes what looks like an omelet in the same way." (Nuttall.)

Citrus nobilis (Rutaceae), 46646. **Mandarin orange.** From Kioto, Japan. Cuttings presented by Mr. H. Atherton Lee, of the Bureau of Plant Industry. "Budsticks of the **Chu Kaa** (Vermilion orange), a variety of *Citrus nobilis.* The fruits of the **Chu Kaa** are smooth-skinned but easily peeled as with the other Mandarin varieties. The color is a light orange at the stem, becoming a deeper orange, almost red, at the blossom end; flesh delicate with little or no rag; core very small. The shape is more nearly globose than that of most Mandarin varieties. The juice is as desirable in taste as that of any citrous fruit I have tasted. The fruit is but few-seeded, for the most part having no seeds or but one. One orange was found having three seeds. This variety is resistant to citrus canker. Should it be as successful under States conditions as it is in Swatow, it would easily rival the Washington Navel, the Valencia, and the Satsuma, in popularity." (Lee.)

Cordia blancoi (Boraginaceae), 46705. **Anonang.** From Philippine Islands. Seeds presented by the Director, College of Agriculture, Los Banos, Laguna. Collected on the College Farm. A medium-sized tree, generally with a short and irregular trunk. The wood is soft and light and easily worked. It is clear yellow when first cut, changing to grayish brown. While not very durable, it is not attacked by pinhole beetles, and is useful for posts and in light construction. The bast is used for making ropes. (Adapted from Schneider, Commercial Woods of the Philippines, p. 205.)

Cucurbita ficifolia (Cucurbitaceae), 46622. **Zambo.** From Ecuador. Collected by Dr. J. N. Rose, Associate Curator, National Herbarium, Washington, D. C. "Resembles a small water-melon. Flesh white, sweetish, made into dulces and also eaten as a vegetable." (Rose.)

"I think it is not known in the United States and may prove useful there. It is a native of this country (Ecuador) where it is cultivated with corn, and is very extensively used for man as well as for stock. The plant will not endure severe frost. It grows at a temperature of from 14° to 25° C. The best rule is to grow it with corn, planting it in the corn rows 20 feet apart, each way. Although in Ecuador it is a perennial, it is more commonly treated as an annual. It is often planted along walls and at the foot of trees on which it climbs and produces fruit continually. This way is successful only where there is no frost. The way it is used here for food is as follows: when the melons are 5 or 6 inches long and the shell still soft enough for the finger nail to be driven into it, they are cooked, or made into various dishes with salt and butter. When ripe it is also eaten, cooked, with milk added at the table. For stock feed it is used when ripe, the raw fruits being cut in pieces; but it is far better, especially for hogs and milk cows, if cooked before feeding. The pulp is white and contains sugar and some starch. The ripe melons can easily be kept for a year, in a dry well-ventilated place, and are thus valuable for winter feed. The melons average 20 to 30 lbs. each. When completely ripe, the shell is very hard and the seeds black. There are two varieties, one with the shell white and the other with the shell green striped with white." (S. Ordonez M.)

Heterospathe elata (Phoenicaceae), 46640. **Palm.** From Philippine Islands. Presented by Mr. P. J. Wester, Agricultural Advisor, Zamboanga, P. I. "A tall,

unarmed palm, with a slender, straight stem and long pinnate leaves, growing in protected situations and where the rainfall is evenly distributed. It is one of the most attractive and graceful palms that I have seen and, from my experience with it at Lamao, it will make a good plant for the conservatory and possibly a good house palm." (Wester.)

Jacaratia mexicana (Papayaceae), 46696. **Bonete.** From Yucatan. Presented by Dr. Mario Calvino, Director, Estacion Experimentale Agronomica, Santiago de las Vegas, Cuba. "Seeds of **Bonete** from Yucatan. It produces edible fruits of a shape and taste much like *Carica papaya.* The **Bonete** plant lives longer than the Papaya." (Calvino.)

"A remarkable tree belonging to the same family as *Carica papaya,* but growing to a much greater size. The fruit, which is commonly called **Bonete** in tropical Mexico, is of a peculiar shape: oblong, pentagonal, five-celled, containing a milky pulp. They are somewhat sweet and edible. They are in many places prepared with sugar in the form of conserves. The leaves are compound and digitate, composed of seven distinct acute lobes." (Safford.)

Lilium columbianum (Liliaceae), 46660. **Lily.** From Bellingham, Washington. Seeds collected by Dr. David Griffiths, of the Bureau of Plant Industry. "A valuable native lily of the North Pacific Coast region, growing under very variable conditions from Northern California to far into Canada. Locally it is called Tiger lily, but is a very different thing and can be readily distinguished from that species by an entire lack of stem bulblets. The species produces abundant seed which germinate readily. This seed was collected near Bellingham, Washington, in September, 1918." (Griffiths.)

x Malus arnoldiana (Malaceae), 46698. **Apple.** From Jamaica Plain, Mass. Seed collected at the Arnold Arboretum by Dr. Walter Van Fleet, of the Bureau of Plant Industry. "Vigorous and very fruitful. May be useful as a stock for dwarfing commercial varieties of apples and for variety breeding." (Van Fleet.)

"Attention has been called to the hybrid Crabapple, *Malus cerifera.* This plant is probably one of the parents of another hybrid which sprang up spontaneously in the Arboretum many years ago and has been called *M. arnoldiana.* The other parent is probably *M. floribunda,* itself believed to be a hybrid which originated in China. If this view

of the origin of *M. arnoldiana* is correct, it is the offspring of two hybrids of different parentage, and is a good illustration of what can be obtained by crossing and recrossing the crabapples. It is a low, broad, bushy tree with long arching upper branches which are raised well above the general head of the plant and are wonderful objects when clothed from end to end with flowers and the blue sky is seen between. The flower buds, like those of *M. floribunda* are of deep rose color and the petals, after the flowers open, gradually turn from rose color to white. The flowers, however, are as large as those of *M. cerifera,* or nearly twice as large as those of *M. floribunda,* and the red fruit is intermediate in size between those of the parents." (Arnold Arboretum, Harvard University, Bulletin of Popular Information, May 16, 1918.)

Merrillia caloxylon (Rutaceae), 46647. **Katinga.** From Manila, Philippine Islands. Presented by Mr. E. D. Merrill, Botanist, Bureau of Science. A medium-sized tree with pale flaky bark, native of Siam. The compound leaves are made up of thirteen oblanceolate leaflets on a winged rachis. The pale yellowish green flowers are followed by yellow citron-like fruits four inches in diameter with a thick skin and green tasteless flesh. The tree is known as the **katinga,** and is famous in the Malay region for its beautiful wood which is of a light yellow color with dark brown streaks. It is fairly hard and takes a good polish. (Adapted from the Journal of the States Branch, Royal Asiatic Society, vol. 50, p. 113.)

Nothofagus fusca (Fagaceae), 46643. **Red Beech.** From Tapanui, New Zealand. Seeds presented by Mr. H. R. Wright, Avondale, Auckland, N. Z. A large tree often reaching a height of 100 feet and having a trunk diameter of 12 feet. The leaves, about one and one-half inches long, are oblong-ovate with serrate margins. It is sparsely distributed throughout the islands, in damp situations. (Adapted from Laing and Blackwell, Plants of New Zealand, pp. 133 and 134.)

Oxalis tuberosa (Oxalidaceae), 46659. **Oca.** From Ecuador. Collected by Dr. J. N. Rose, Associate Curator, U. S. National Herbarium. "**No. 19. Ocha.**" (Rose.)

A plant related to our common sheep sorrel, widely cultivated in Peru and Bolivia for the sake of its fleshy rootstocks, which are an important article of food.

These are eaten raw, as well as cooked, and are also frozen and dried. Raw **ocas**, when first dug, have a distinctly acid taste, like sheep sorrel, but this is lost after the tubers have been exposed to the sun. The plant attains a height of a foot or more and has the appearance of a large sheep sorrel. The flowers are yellow and the leaflets are folded at night or in wet weather, the same as in the sheep sorrel. The varieties are numerous, though much fewer than in the case of the potato. The tubers are very tender, rather crisp and juicy. In form some are nearly cylindrical, while others are slender at the base and strongly thickened at the end. The colors vary from white or light pink through darker pinks or yellows to deep purplish red. In addition to the pleasing coloration, the surface of the tubers is smooth and clear, so that the general appearance is very attractive. If the taste should prove acceptable **ocas** might become very popular for salads and pickles. The nature and habits of the plant indicate that it may be adapted to acid soil, which would be a distinct advantage in some parts of the United States. (Adapted from notes under S. P. I. No. 41168, by Mr. O. F. Cook.)

Pentstemon palmeri (Scrophulariaceae), 46595. **Beardtongue.** Plants grown at the Plant Introduction Field Station, Chico, California. "*Pentstemon palmeri*, from the western and southern slopes of the San Francisco Mountains of Arizona, is one of our best and most promising native species of this useful genus of ornamental plants. It withstands droughty conditions well and responds remarkably to good treatment. In nature the spikes stand 4 to 6 feet high and the plant is reduced to little more than a rosette of basal leaves at the close of the long dry, late summer and autumn. Under conditions at Chico, California, the flowering stems may stand 6 to 7 feet high and the plants go into winter with a vegetative growth of 18 inches or more. Its abundant glaucous green foliage, long spike (2 to 3 ft.) of large pink flowers opening progressively from below, together with its very robust habit, make it a desirable acquisition to our long list of pentstemons. It has good seed habits and if started early in flats and transplanted into the open in early spring it will blossom sparingly the same year." (Griffiths.)

United States Department of Agriculture.
Bureau of Plant Industry.
Office of Foreign Seed and Plant Introduction.
Washington, D. C.

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